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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/941,183 | 08/27/2001 | Giorgi Bit-Babik | CM03482J | 7074 |

24273 7590 01/28/2004
MOTOROLA, INC
INTELLECTUAL PROPERTY SECTION
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EXAMINER

CHEN, SHIH CHAO

ART UNIT PAPER NUMBER

2821

DATE MAILED: 01/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/941,183

Applicant(s)

BIT-BABIK ET AL.

Examiner

Shih-Chao Chen

Art Unit

2821

ML

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-20 and 29-47 is/are allowed.
- 6) ☒ Claim(s) 1-4, 21-28, 48, 49 and 51-53 is/are rejected.
- 7) ☒ Claim(s) 50 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the dielectric resonator antenna is prism shaped in claim 4 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-4 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The added clause in the last two lines of claim 1 is new matter because this implies that the antenna is operational in a continuous band. Specification on page 15, lines 11-29 and FIGs. 7 and 8 do not show such a characteristic.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Ittipiboon et al. (U.S. Patent No. 5,952,972).

Regarding claim 21, Ittipiboon et al. teaches in figures 1-10 an antenna system comprising: a dielectric resonator antenna [24]; and a microstrip [14] including one or more charge accumulation regions (i.e. Matching Stub, See FIG. 1b) proximate to the dielectric resonator antenna [24].

Regarding claim 22, Ittipiboon et al. teaches in figures 1-10 the antenna system according to claim 21 wherein the microstrip [14] comprises three or more charge accumulation regions (i.e. Matching Stub, See FIG. 1b).

Regarding claim 23, Ittipiboon et al. teaches in figures 1-10 the antenna, system according to claim 22 wherein: the dielectric resonator antenna [24] is parallelepiped in shape (See FIG. 2b) and comprises: a first large area surface characterized by a height, and a length that is measured parallel to the microstrip [14]; a second large area surface that is characterized by the height and the length, is opposite to the first large area

surface, and is separated from the first large area surface by a thickness dimension;
and a first edge that extends between the first large area surface and the second large area surface and is located proximate to the three or more charge accumulation regions.

4. Claims 48-49 and 51-53 are rejected under 35 U.S.C. 102(e) as being anticipated by Heinrichs et al. (U.S. Patent No. 6,323,808).

Regarding claim 48, Heinrichs et al. teaches in figures 3-6 an antenna system comprising: a ground plane (See col. 4, lines 51-53); a circuit substrate [9] including an obverse side and a reverse side that includes a first area covered by the ground plane and a second area that is not covered by the ground plane (See FIG. 5); a dielectric resonator antenna [8] supported on the obverse side, over the clear area, the dielectric resonator antenna [8] including an edge; and a microstrip [10] on the obverse side, the microstrip [8] including an end segment parallel to and proximate to the edge.

Regarding claim 49, Heinrichs et al. teaches in figures 3-6 the antenna system according to claim 48 wherein: the dielectric resonator antenna [8] comprises a parallelepiped (See FIG. 3) characterized by a length [a], height [b], and a thickness [d] measured perpendicular the circuit substrate [9], and a ratio of the length to the thickness is at least about 10 (See col. 4, lines 7-13).

Regarding claim 51, Heinrichs et al. teaches in figures 3-6 a wireless telephone (i.e. a mobile radiotelephone) having a front side and a back side, the wireless telephone further comprising: a speaker [18] mounted at the front side of the wireless telephone; a microphone [19] mounted at the front side of the wireless telephone; a

dielectric resonator antenna [8] positioned within the wireless telephone; and a conductive shield (i.e. ground plane, See col. 4, lines 51-53) located between the dielectric resonator antenna [8] and the front side.

Regarding claim 52, Heinrichs et al. teaches in figures 3-6 the wireless telephone according to claim 51 further wherein: the conductive shield (See col. 4, lines 51-53) comprises a ground plane.

Regarding claim 53, Heinrichs et al. teaches in figures 3-6 the wireless telephone according to claim 52 further comprising: a substrate [9] including: a first surface supporting the ground plane (See col. 4, lines 51-53); and a second surface supporting the dielectric resonator antenna [8].

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ittipiboon et al. (Cited above).

Ittipiboon et al. teaches every feature of the claimed invention except for the ratio of the length to the thickness dimension is at least about 10, and the thickness between about 50 and 500 microns. The size of a dielectric resonator is inversely proportional to the square root of the dielectric constant of the resonator, by choosing a high value of the dielectric constant, the size of the dielectric resonator antenna can be made quite

small, as desired for many new wireless application. A change in size is generally recognized as being within the level of ordinary skill in the art.

Allowable Subject Matter

7. Claims 5-20 and 29-47 are allowed.
8. Claim 50 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claims 5-20 and 50 is the inclusion of the limitation of a quantity $A \cdot \lambda/V$ that is at least about 50. It is this limitation found in each of the claims, as it is claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 29-39 is the inclusion of the limitation of a parasitic element positioned along the first edge. It is this limitation found in each of the claims, as it is claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 40-47 is the inclusion of the limitation of a conductor including a first end positioned proximate the dielectric resonator antenna . It is this limitation found in each of the claims, as it is claimed in the

combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Response to Arguments

10. Applicant's arguments with respect to claims 1, 21, 48 and 51 have been considered but are moot in view of the new ground(s) of rejection.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-Chao Chen whose telephone number is (571) 272-1819. The examiner can normally be reached on Monday-Friday from 7 AM to 4:30 PM, First Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Shih-Chao Chen

Shih-Chao Chen
Examiner
Art Unit 2821

SXC
January 22, 2004